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# Idaho

## Basin Outlook Report

### May 1, 1993





# **Basin Outlook Reports**

## **and Federal - State - Private Cooperative Snow Surveys**

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*For more water supply and resource management information, contact:*

**Your local Soil Conservation Service Office**

**or**

**Soil Conservation Service**

**Snow Surveys**

**3244 Elder Street, Room 124**

**Boise ID 83705-4711**

**(208) 334-1614**

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### *How forecasts are made*

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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3244 Elder Street, Room 124  
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### BASIN REPORTS:

☒ **G - General Outlook Report** (mailed to all recipients)

☐ **#1 - Panhandle Region**

☐ **#2 - Clearwater River Basin**

☐ **#3 - Salmon River Basin**

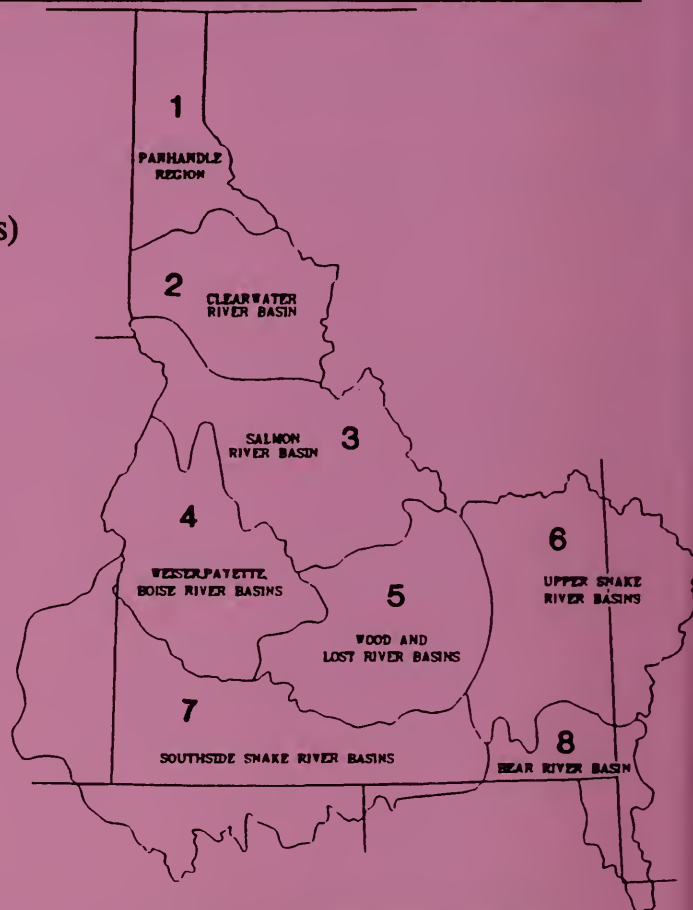
☐ **#4 - Weiser, Payette, Boise River Basins**

☐ **#5 - Wood and Lost River Basins**

☐ **#6 - Upper Snake River Basin**

☐ **#7 - Southside Snake River Basins**

☐ **#8 - Bear River Basin**



### OTHER REPORTS:

☐ **- Annual Data Summary** (published after each water year, it contains individual snow course measurements, SNOTEL pillow and precipitation readings, and the 1961-90 averages)

☐ **- Fact Sheet containing the first of month snow data values** (snow pillow readings, last year, and average, and snow course data - snow depth/water content) **mailed around the 5th of each month, January - June. This data is provisional and subject to revision.**

☐ **- Water Supply Outlook Report for the Western U.S.** (contains narratives and streamflow forecasts for the 11 western states and Alaska)

All the above reports are available on the Centralized Forecast System (CFS) computer in Portland, Oregon. A terminal or computer with communication software, modem and phone line are required.

☐ **- Yes, I am interested in computer access to the Basin Outlook Reports and other water supply information. Phone #** \_\_\_\_\_.

Suggestions, comments, or remarks: \_\_\_\_\_

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# **IDAHO WATER SUPPLY OUTLOOK REPORT**

**MAY 1, 1993**

## **SUMMARY**

April showers bring May flowers, as well as a healthy water supply for southern Idaho. April precipitation was very heavy in the central and southern mountains, with some stations reporting more than twice the norm for the month. High elevation snowpacks continue to increase, with little melt reported as of May 1. Reservoirs across southern Idaho continue to improve storage, with some basins currently under flood control operations. All these factors point to an adequate water supply for southern Idaho in 1993, a welcome relief after the previous six years of drought. Northern Idaho conditions are not as promising. April provided above normal precipitation to the Panhandle and Clearwater basins, but snowpacks are still below normal. Streamflow volumes for the remainder of the runoff season are expected to be below normal in that part of the state.

## **SNOWPACK**

With the exception of northern Idaho, snowpacks are above normal throughout the state. Delayed snowmelt is beginning to exaggerate the snowpack percentages, as snowpacks typically begin to melt by mid-April. Nonetheless, snowpacks are quite healthy in the higher elevations of the central and southern mountains. Conditions currently range from 110% of average in the Salmon basin to 130% or better across southern Idaho. Northern Idaho snowpacks are below normal, ranging from 65 to 80% of average. The delayed snowmelt this year promises better flows later in the season, but also brings the possibility of flooding in basins with heavy mountain snowpacks.

## **PRECIPITATION**

April precipitation was quite heavy in southern and central Idaho. Central mountain watersheds (Weiser, Payette, Boise, Wood, and Lost) reported 180-200% of normal moisture for the month. Many individual stations reported more than twice the norm for April! Northern Idaho received about 140% of average April precipitation; one of the wettest months in over a year for that part of the state. Cool, wet weather in the agricultural valleys has maintained good soil moisture conditions, but has delayed spring planting in some areas. Lewiston had the third wettest April on record. Temperatures were below normal for the month throughout the state, with Boise reporting a departure of -1.0 degrees from the normal. The 30-day outlook from the National Weather Service calls for near normal precipitation and temperatures.

## **RESERVOIRS**

Reservoir storage improved considerably in central and southern Idaho during April. Cool, wet conditions have delayed the initial onset of irrigation by nearly a month compared to last year. The delay of irrigation withdrawals combined with the forecasts of normal or above runoff means most of the reservoirs in southern Idaho will fill this year. Magic Reservoir increased from 23 to 77% of capacity during the month while Palisades Reservoir increased from 38 to 68%. Most other reservoirs are at least half full. A few reservoirs, however, are less than one-third full, including Anderson Ranch, Bear Lake, Jackson Lake, Blackfoot, Oakley, and Salmon Falls. Storage should improve in those reservoirs with the onset of warmer temperatures and snowmelt, but water users should keep in contact with their local irrigation districts for additional information. Note: SCS reports reservoir information in terms of usable volumes, which includes both active, inactive, and in some cases dead storage. Other operators may report reservoir contents in different terms.

## **STREAMFLOW**

Cool, wet conditions in April have delayed the snowmelt in the mid and high elevation basins throughout the state. As a result, streamflows during the month were below normal in many areas. Lower elevation watersheds, however, benefitted from abundant rainfall and produced above normal runoff in April. With snowpacks still increasing in the high mountains, water supply prospects are excellent for the remaining May-July runoff season except in northern Idaho. The Panhandle region and Clearwater basins are expected to produce just 70 to 90% of the average May-July runoff volumes. Central and southern Idaho streams are expected to yield normal to above normal May-July volumes while eastern Idaho basins are forecast slightly below normal. The abundant snowpack and delayed melt could set the conditions for high peak flows and possible flooding if temperatures warm dramatically in the next few weeks.

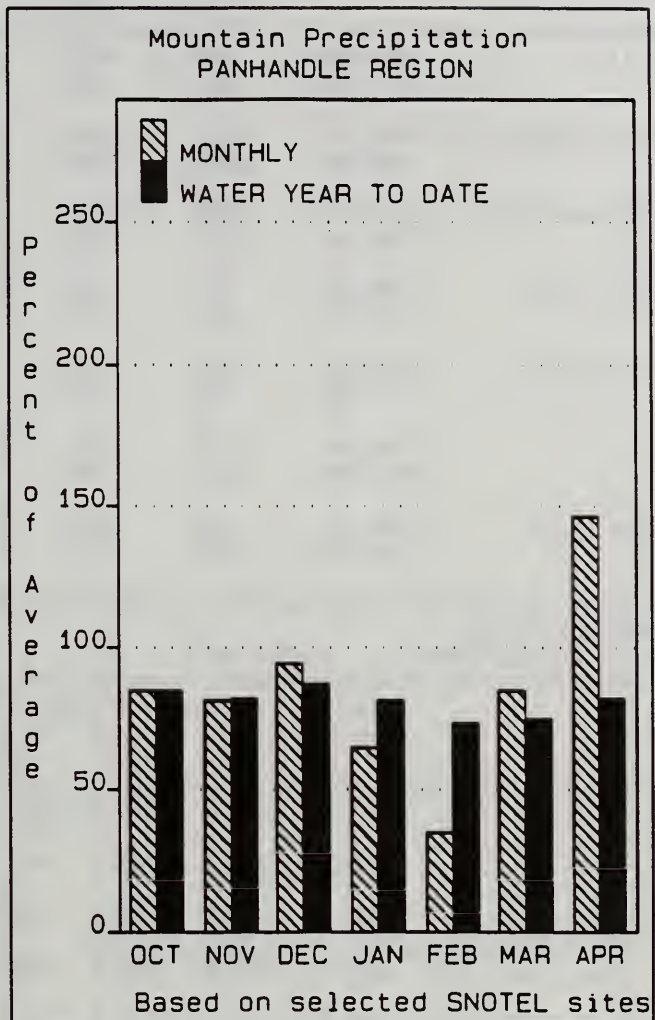
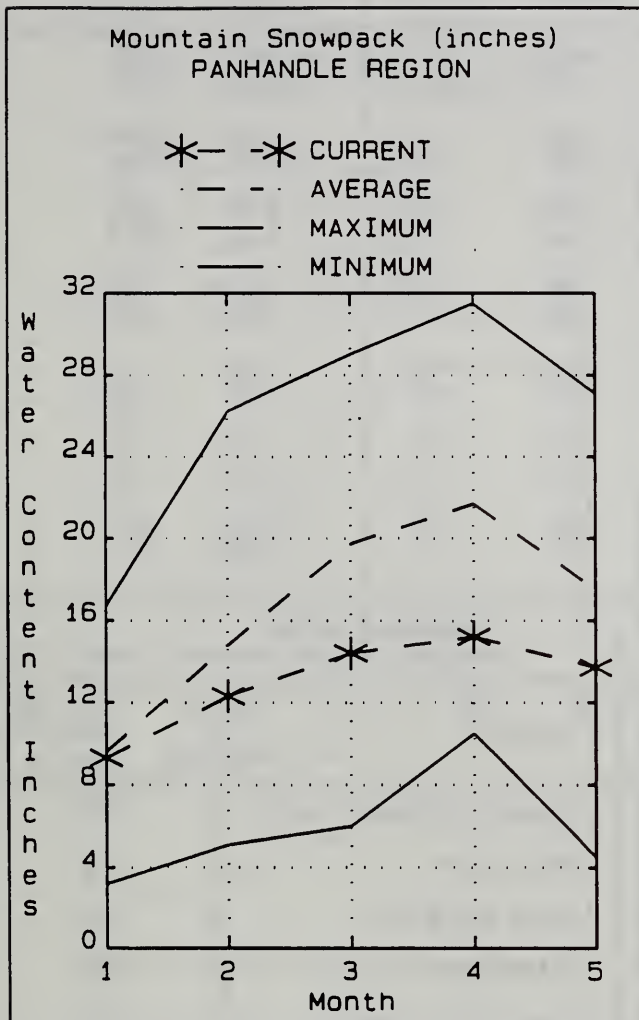
## **RECREATION OUTLOOK**

Cool weather is keeping the high mountain snowpacks in place, and that's good news for Idaho river runners. When spring finally comes, boaters can expect high flows on the central mountain streams, including the Salmon, Payette, and Boise River drainages. The delayed melt will extend the boating season on these rivers along with the desert rivers of the state: the Owyhee, Bruneau and Jarbidge. Northern Idaho snowpacks are below normal this year, and consequently peak flows may be lower and the season could be shorter than normal. Reservoir users around the state will have a much longer boating season than last year. All in all, 1993 will be one of Idaho's best water sports years in recent memory!



## PANHANDLE REGION

MAY 1, 1993



### WATER SUPPLY OUTLOOK

April precipitation was 146% of average in the Idaho Panhandle, but this year it's a case of too little too late. This is the first month of the water year that northern Idaho received above average moisture. Water year to date precipitation stands at only 82% of average. Snowpack percentages increased from last month as a result of the abundant moisture and delayed snowmelt and are currently 65 to 80% of average. May-July streamflow forecasts in the region range from 72% of average for Pend Oreille Lake inflow to 83% for the Spokane River near Post Falls to 90% for the Coeur d'Alene at Enaville. Streams flowing into Idaho from Montana and Canada are also expected to be quite low. Water users should be prepared for lower than normal peak flows and an early recession to low flow conditions.

PANHANDLE REGION  
Streamflow Forecasts - May 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
KOOTENAI at Leonia (1,2)	MAY-JUL	3470	4260	4620	74	4980	5770	6223
	MAY-SEP	4060	4990	5410	74	5830	6760	7304
CLARK FK at Whitehorse Rpds (1,2)	MAY-JUL	5420	6660	7230	72	7800	9040	10020
	MAY-SEP	6050	7440	8070	72	8700	10100	11200
PEND OREILLE LAKE inflow (1,2)	MAY-JUL	5970	7310	7920	72	8530	9870	11070
	MAY-SEP	6590	8080	8760	71	9440	10900	12290
PRIEST nr Priest River (1,2)	MAY-JUL	315	425	475	76	525	635	627
	MAY-SEP	360	470	520	76	570	680	680
COEUR D'ALENE at Enaville (1)	MAY-JUL	215	360	425	90	490	635	472
	MAY-SEP	380	420	460	90	530	690	512
ST. JOE at Calder	MAY-JUL	635	705	750	85	795	865	881
	MAY-SEP	680	755	805	85	855	930	949
SPOKANE nr Post Falls (1,2)	MAY-JUL	865	1270	1450	83	1630	2040	1743
	MAY-SEP	925	1350	1540	84	1730	2160	1836

PANHANDLE REGION  
Reservoir Storage (1000 AF) - End of April

PANHANDLE REGION  
Watershed Snowpack Analysis - May 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HUNGRY HORSE	3451.0	900.0	2074.0	2043.0	Kootenai ab Bonners Ferry	38	115	66
FLATHEAD LAKE	1791.0	787.0	873.8	937.2	Moyie River	3	125	64
NOXON RAPIDS	335.0	263.5	272.0	208.7	Clark Fork River	53	160	82
PEND OREILLE	1561.3	815.4	854.7	920.7	Priest River	5	149	74
COEUR D'ALENE	238.5	240.5	227.3	246.7	Pend Oreille River	81	152	80
PRIEST LAKE	119.3	82.0	60.0	96.2	Rathdrum Creek	1	0	90
					Hayden Lake	0	0	0
					Coeur d'Alene River	7	220	78
					St. Joe River	2	118	80
					Spokane River	10	190	79
					Palouse River	1	0	0

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

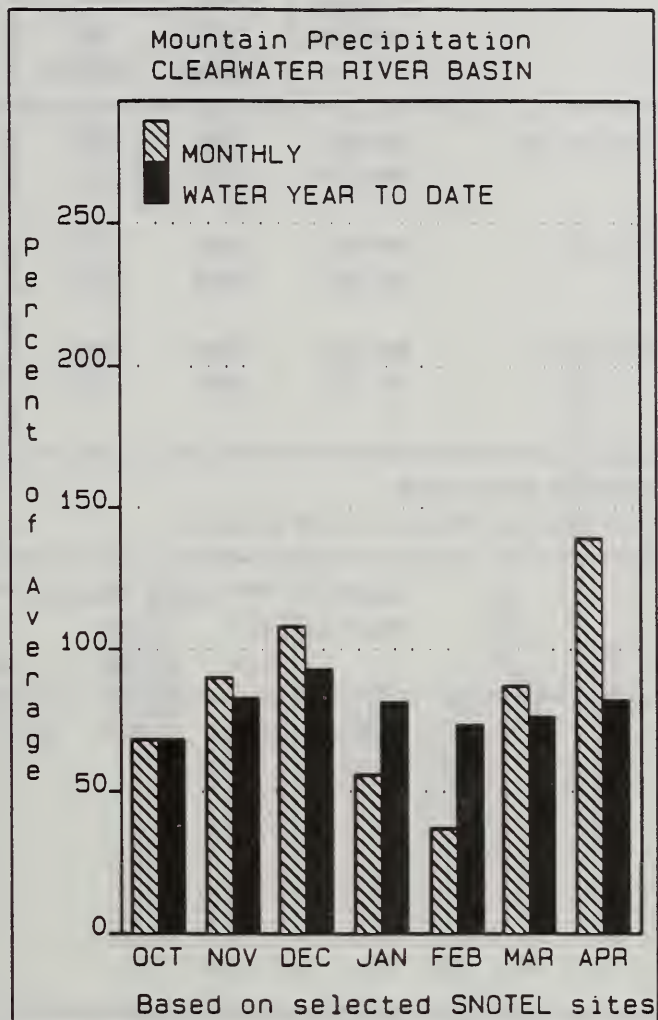
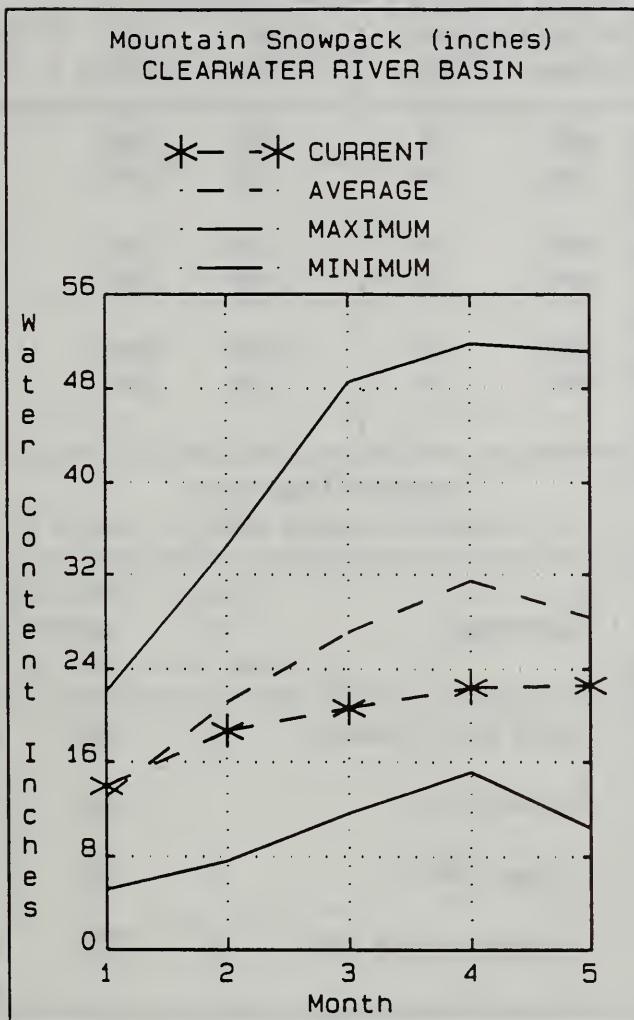
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
 (2) - The value is natural flow - actual flow may be affected by upstream water management.



# CLEARWATER RIVER BASIN

MAY 1, 1993



## WATER SUPPLY OUTLOOK

April brought snow to the high country and rain to the valleys of the Clearwater basin. April precipitation was 139% of average: good news, but not enough to offset the lack of moisture since December. Water year precipitation is only 82% of average, about the same as last year at this time. Snowpacks reflect the precipitation figures, and currently range from 75 to 80% of average. The snow line as of May 1 was around 5000 feet in the basin. Runoff is expected to be better than the record low figures of last year, but forecasts are only calling for 72 to 79% of average volumes. Storage in Dworshak reservoir is excellent at 91% of capacity which should help augment flows on the Clearwater River. Water users should be prepared for an early return to low flow conditions this year. River runners should expect below normal flows on the Selway and Lochsa rivers, unless the spring and summer continue to be unusually wet.

CLEARWATER RIVER BASIN  
Streamflow Forecasts - May 1, 1993

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	===== Chance Of Exceeding * =====						
		90%	70%	50% (Most Probable)		30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
		=====						
DWORSHAK RESERVOIR inflow (1)	MAY-JUL	1080	1350	1470	72	1590	1860	2038
	MAY-SEP	1180	1470	1600	72	1730	2020	2212
CLEARWATER at Orofino (1)	MAY-JUL	2090	2740	3030	79	3320	3970	3831
	MAY-SEP	2210	2900	3210	79	3520	4210	4089
CLEARWATER at Spalding (1,2)	MAY-JUL	3380	4260	4660	78	5060	5940	5972
	MAY-SEP	3620	4560	4990	78	5420	6360	6405

CLEARWATER RIVER BASIN Reservoir Storage (1000 AF) - End of April					CLEARWATER RIVER BASIN Watershed Snowpack Analysis - May 1, 1993			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DWORSHAK	3467.8	3151.8	3408.0	2276.0	North Fork Clearwater	11	132	79
					Lochsa River	4	126	75
					Selway River	5	155	82
					Clearwater Basin Total	18	136	80

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

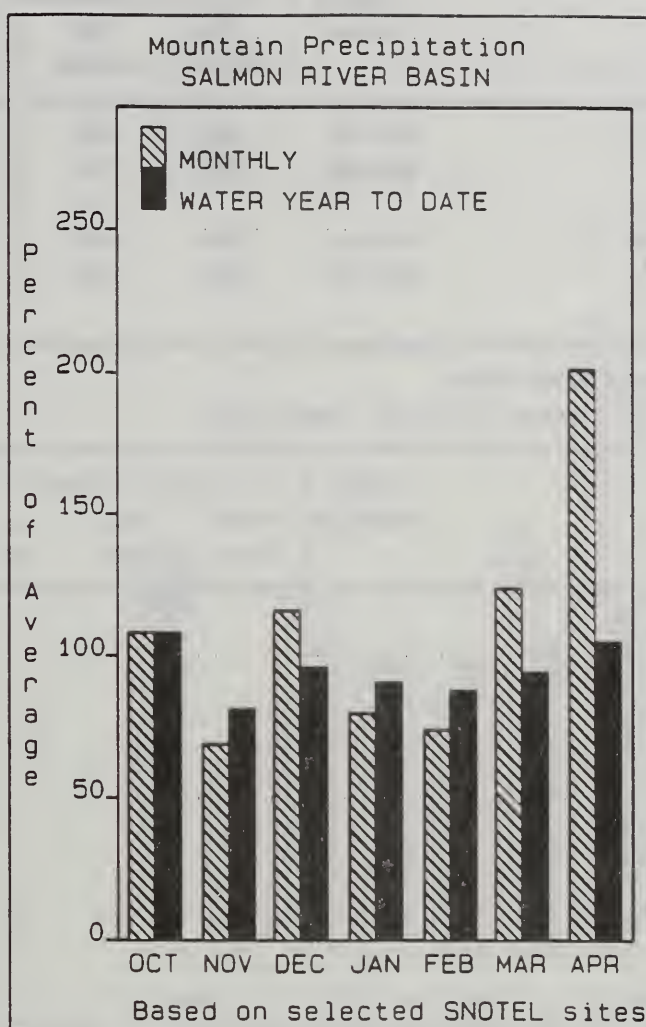
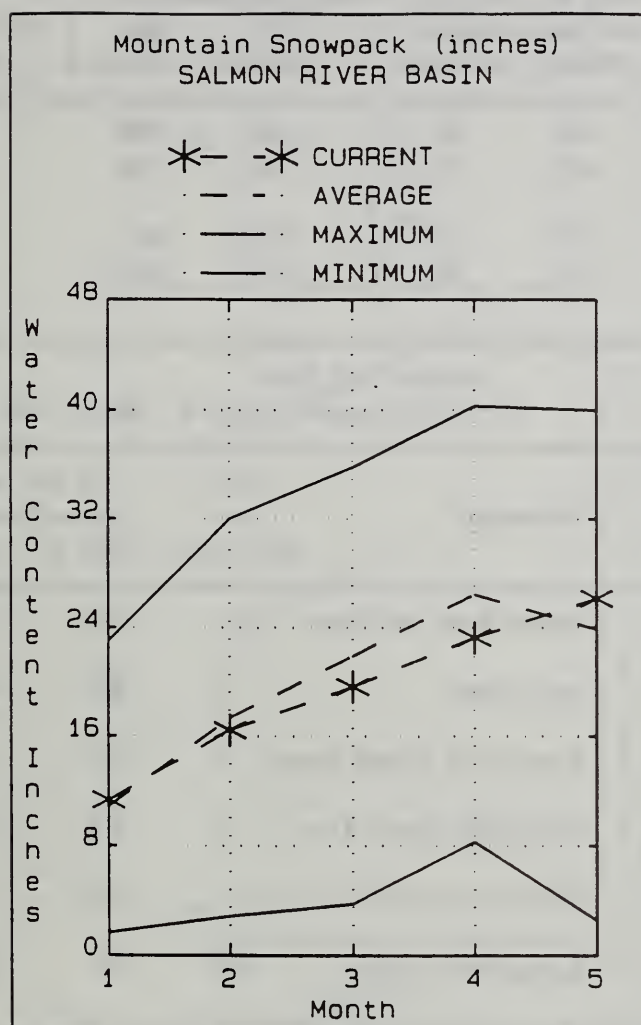
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# SALMON RIVER BASIN

MAY 1, 1993



## WATER SUPPLY OUTLOOK

The Salmon River basin received over twice its normal precipitation during April, bringing the water year precipitation to 105% of average. Cool temperatures kept this moisture in the form of snow in the higher elevations, and mountain snowpacks have increased since April 1. The delayed snowmelt this year should improve runoff yields and extend the runoff period later into the summer. Snowpack percentages increased from last month and are currently around 110% of average. Streamflow forecasts for the May-July period call for 92% of average for the Salmon at Salmon and 90% for the Salmon at Whitebird. River runners should expect moderately high flows on the Main Salmon and its tributaries when spring finally arrives. The late snowmelt could cause some access delays into the higher elevations in the basin. All in all, the 1993 water year is shaping up to be a major improvement over the drought conditions of the last few years.

SALMON RIVER BASIN  
Streamflow Forecasts - May 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		Chance Of Exceeding *						
		90%	70%	50% (Most Probable)		30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF) (% AVG.)		(1000AF)	(1000AF)	(1000AF)
SALMON at Salmon (1)	MAY-JUL	420	620	710	92	800	1000	772
	MAY-SEP	505	740	850	92	960	1190	922
SALMON at White Bird (1)	MAY-JUL	3640	4420	4770	90	5120	5900	5284
	MAY-SEP	4080	4950	5340	90	5730	6600	5930

SALMON RIVER BASIN  
Reservoir Storage (1000 AF) - End of April

SALMON RIVER BASIN  
Watershed Snowpack Analysis - May 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					Salmon River ab Salmon	8	348	117
					Lemhi River	5	160	107
					Middle Fork Salmon River	3	265	109
					South Fork Salmon River	3	249	109
					Little Salmon River	4	1812	117
					Salmon Basin Total	24	277	109

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

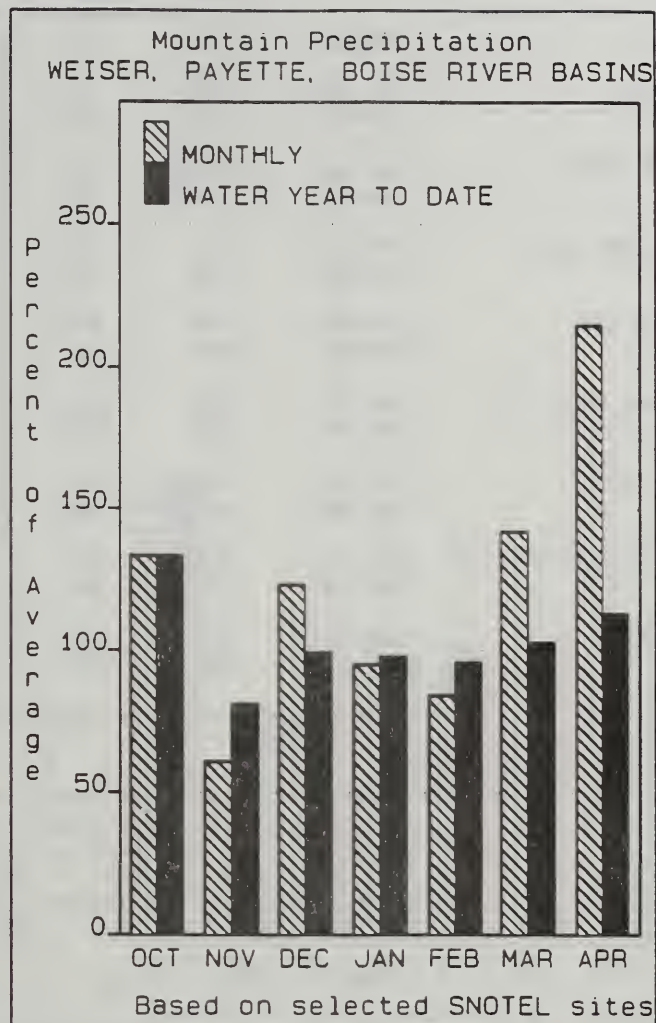
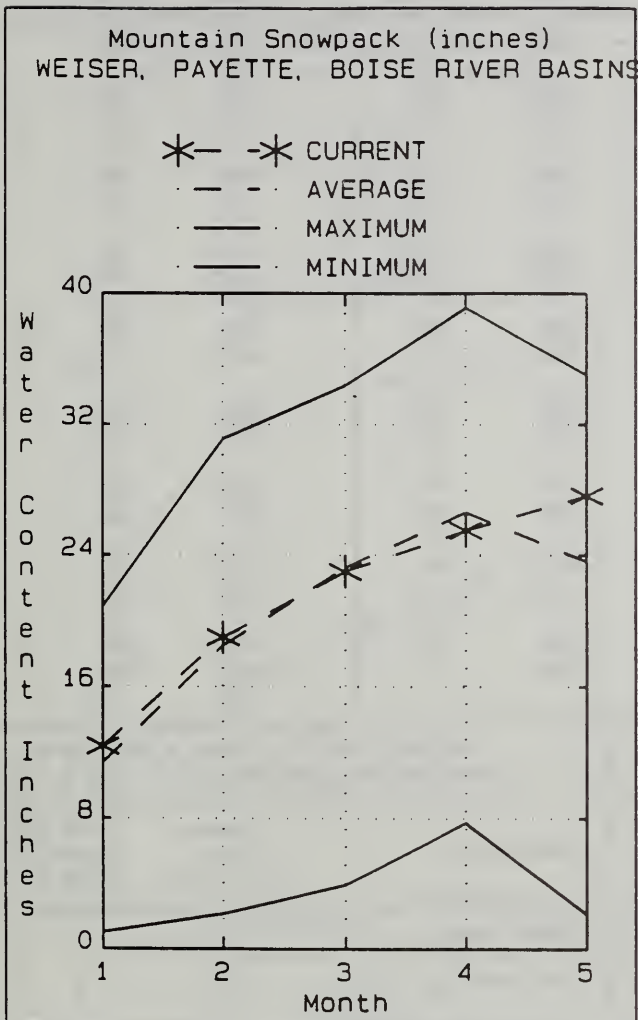
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# WEISER, PAYETTE, BOISE RIVER BASINS

MAY 1, 1993



## WATER SUPPLY OUTLOOK

April precipitation was excellent in the west central mountains. This area received more than twice the normal amount for the month. Cool temperatures kept this moisture in the form of snow in the higher elevations, improving the snowpack from the figures reported last month. As a result of the abundant moisture and delayed snowmelt, the snowpack now ranges from 110 to 120% of average in the west central mountains. Streamflow forecasts have also increased and now call for 104% of average for the May-July period for the Boise River near Boise and 104 to 110% of average for streams in the Payette basin. Combined reservoir storage in the Boise basin is 61% of usable capacity, which is 88% of average. The Payette basin reservoirs are also 61% full, slightly above average for this time of year. The water supply should be adequate this year for Boise basin irrigators -- a dramatic change from last year. River runners should expect moderately high flows on the Payette and Boise rivers when the snowpack finally begins to melt. Lucky Peak will fill after the flood potential subsides and should remain full at least through Labor Day.

WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts - May 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
WEISER nr Weiser (1)	MAY-JUL	41	137	180	72	225	320	250
SF PAYETTE at Lowman	MAY-JUL	380	400	415	111	430	450	375
	MAY-SEP	435	460	475	110	490	515	431
DEADWOOD RESERVOIR INFLOW	MAY-JUL	116	126	133	111	140	150	120
	MAY-SEP	123	134	141	111	148	159	127
NF PAYETTE at Cascade (1,2)	MAY-JUL	360	420	445	109	470	530	407
	MAY-SEP	380	445	475	107	505	570	442
NF PAYETTE nr Banks (2)	MAY-JUL	450	515	555	108	600	660	512
	MAY-SEP	485	555	600	108	645	715	554
PAYETTE nr Horseshoe Bend (1,2)	MAY-JUL	1120	1330	1430	110	1530	1740	1304
	MAY-SEP	1220	1450	1560	108	1670	1900	1442
BOISE nr Twin Springs (1)	MAY-JUL	460	510	535	105	560	610	509
	MAY-SEP	515	565	590	105	615	665	564
SF BOISE at Anderson Rnch Dm (1,2)	MAY-JUL	345	420	450	104	480	555	432
	MAY-SEP	380	455	490	104	525	605	470
BOISE nr Boise (1,2)	MAY-JUL	930	1070	1130	104	1190	1330	1090
	MAY-SEP	1040	1180	1250	104	1320	1460	1204

WEISER, PAYETTE, BOISE RIVER BASINS  
Reservoir Storage (1000 AF) - End of April

WEISER, PAYETTE, BOISE RIVER BASINS  
Watershed Snowpack Analysis - May 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MANN CREEK	11.1	11.7	9.1	10.4	Mann Creek	1	0	154
CASCADE	703.2	453.2	516.7	411.7	Weiser River	3	0	129
DEADWOOD	161.9	76.8	80.5	101.1	North Fork Payette	7	533	116
ANDERSON RANCH	464.2	139.1	94.2	327.2	South Fork Payette	4	277	111
ARROWROCK	286.6	255.6	85.5	214.9	Payette Basin Total	12	419	114
LUCKY PEAK	293.2	246.4	255.6	182.9	Middle & North Fork Boise	6	353	119
LAKE LOWELL (DEER FLAT)	align="center">177.1	align="center">121.2	align="center">52.6	align="center">169.8	South Fork Boise River	5	262	120
					Mores Creek	4	4281	118
					Boise Basin Total	11	365	119
					Canyon Creek	0	0	0

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

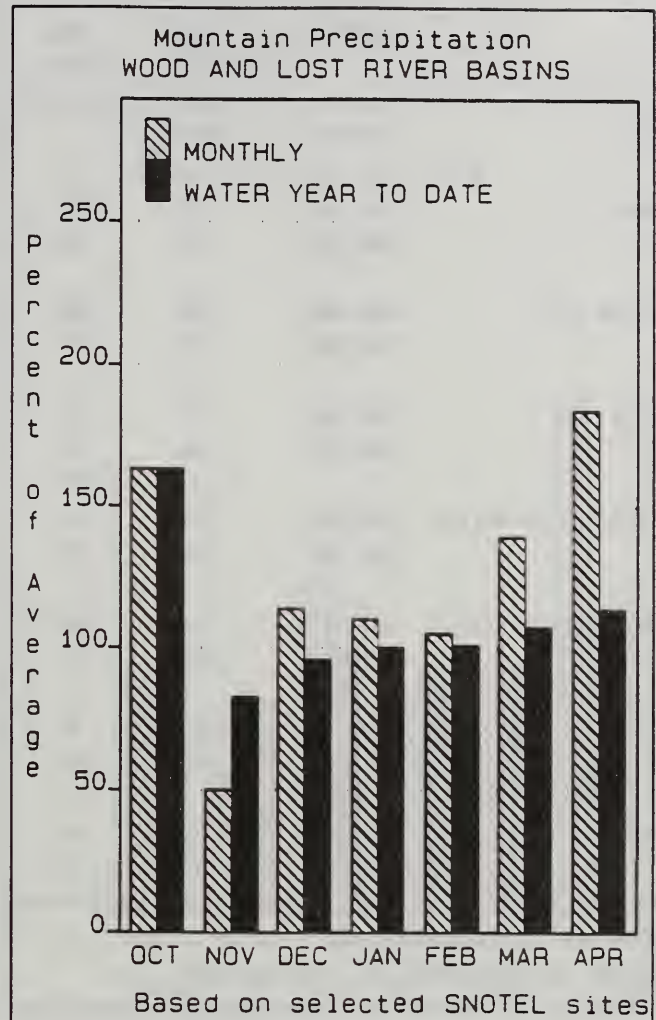
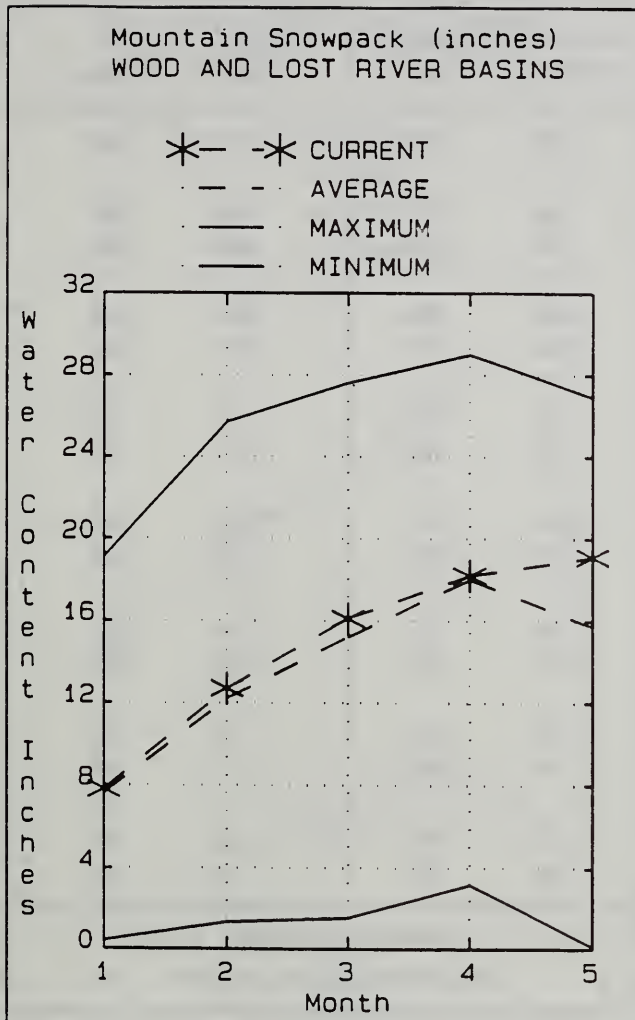
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# WOOD and LOST RIVER BASINS

MAY 1, 1993



## WATER SUPPLY OUTLOOK

Heavy precipitation has fallen during the past two months in the Wood and Lost river basins, bringing the water year precipitation to 114% of average. Cool temperatures during April caused much of this moisture to fall as snow in the higher elevations. Snowpack percentages increased significantly from last month as a result of the abundant moisture and delayed snowmelt and currently range from 120 to 130% of average. Streamflow forecasts for the May-July period have also increased and now call for above average flows for all streams in the basin. Magic, Little Wood, and Mackay reservoirs are holding 77%, 88%, and 66% of usable capacity respectively. Improved reservoir storage, delayed irrigation demand and heavy spring precipitation are promising adequate water supplies for the summer.

WOOD AND LOST RIVER BASINS  
Streamflow Forecasts - May 1, 1993

		<<===== Drier ===== Future Conditions ===== Wetter =====>>							
Forecast Point	Forecast Period	===== Chance Of Exceeding * =====							30-Yr Avg. (1000AF)
		90%	70%	50% (Most Probable)		30%	10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		
BIG WOOD AT HAILEY	MAY-SEP	196		270	106		340		255
BIG WOOD nr Bellevue	MAY-JUL	127	151	167	107	183	205		156
	MAY-SEP	138	163	180	106	197	225		170
BIG WOOD bl Magic Dam (2)	MAY-JUL	173	200	220	109	240	265		202
	MAY-SEP	185	215	235	109	255	285		216
LITTLE WOOD nr Carey	MAY-JUL	57	65	71	109	77	85		65
	MAY-SEP	63	72	78	107	84	93		73
BIG LOST at Howell Ranch nr Chilly	MAY-JUL	151	166	176	104	186	200		169
	MAY-SEP	175	192	203	104	215	230		195
BIG LOST bl Mackay Reservoir (2)	MAY-JUL	114	128	138	101	148	162		137
	MAY-SEP	127	161	171	101	181	215		169
LITTLE LOST bl Wet Ck	MAY-JUL	22	26	28	104	30	34		27
	MAY-SEP	27	33	36	103	40	45		35
LITTLE LOST nr Howe	MAY-JUL	24	26	27	100	28	30		27
	MAY-SEP	33	36	38	100	40	44		38

WOOD AND LOST RIVER BASINS  
Reservoir Storage (1000 AF) - End of April

WOOD AND LOST RIVER BASINS  
Watershed Snowpack Analysis - May 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MAGIC	191.5	147.2	38.9	167.7	Big Wood ab Magic	7	349	122
LITTLE WOOD	30.0	26.5	23.8	24.6	Camas Creek	1	0	0
MACKAY	44.4	29.1	31.2	34.2	Big Wood Basin Total	8	349	122
					Little Wood River	3	484	131
					Fish Creek	0	0	0
					Big Lost River	6	429	122
					Little Lost River	3	400	129

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

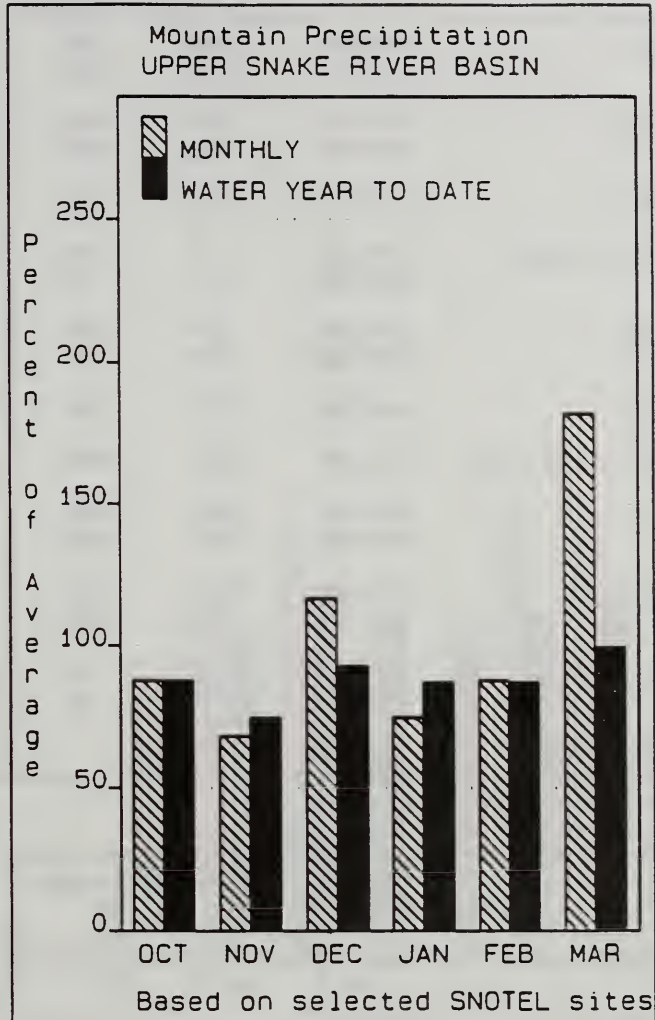
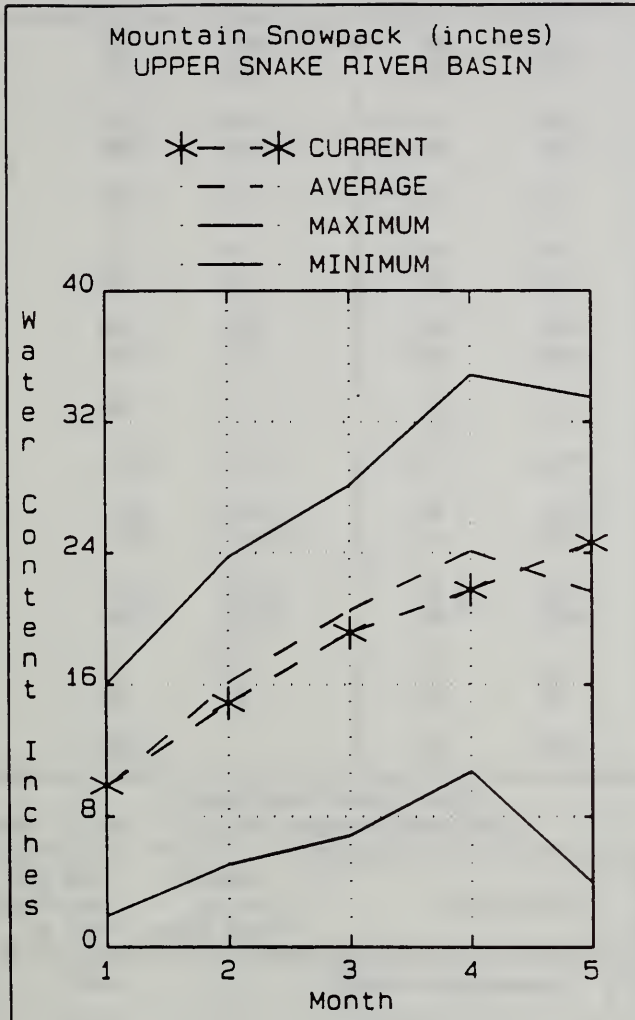
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.



# UPPER SNAKE RIVER BASIN

MAY 1, 1993



## WATER SUPPLY OUTLOOK

April precipitation was 182% of average in the upper Snake River basin, bringing precipitation for the water year to near normal. This wet pattern continued into early May as well, with some stations receiving their normal monthly complement during the first week of the month. Snow measuring sites above 7300 feet in elevation continued to increase in snow water content during April. Snowpack percentages increased significantly from last month as a result of the abundant moisture and delayed snowmelt, and now range from 100 to 120% of average for basins in the upper Snake. Streamflow forecasts have increased slightly for the May-July forecast period and now range from 80% of average for Palisades Reservoir inflow to 95% for the Portneuf at Topaz. Combined storage for eight major reservoirs in the basin is 67% of usable capacity or 89% of average. Last year at this time many reservoirs were reaching their peak storage levels due to early irrigation demand. With the possible exception of Jackson Lake, the Snake reservoir system is expected to fill this year, and water supplies should be adequate for most users.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - May 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
HENRYS FORK nr Ashton	MAY-JUL	295	335	365	84	395	435	432
	MAY-SEP	425	480	520	84	560	615	618
HENRYS FORK nr Rexburg	MAY-JUL	725	800	850	84	900	980	1016
	MAY-SEP	960	1060	1120	84	1180	1280	1339
FALLS RIVER nr Squirrel	MAY-JUL	225	260	275	85	290	330	322
TETON ab S Leigh Ck nr Driggs	MAY-JUL	93	109	120	92	131	147	130
	MAY-SEP	127	147	160	90	173	193	177
TETON nr St. Anthony	MAY-JUL	240	280	305	93	330	370	329
	MAY-SEP	305	350	380	93	410	455	408
SNAKE nr Moran (1,2)	MAY-SEP	550	630	670	82	710	790	814
PALISADES RESERVOIR inflow (1,2)	APR-SEP	2450	2890	3020	80	3150	3580	3763
SNAKE nr Heise (2)	MAY-JUL	1890	2230	2460	80	2690	3030	3074
	MAY-SEP	2270	2680	2950	80	3220	3630	3672
SNAKE nr Blackfoot (1,2)	MAY-JUL	2410	2940	3180	80	3420	3950	3981
	MAY-SEP	3030	3700	4010	80	4320	4990	5019
PORTNEUF at Topaz	MAY-JUL	40	47	52	95	57	64	55
	MAY-SEP	56	66	72	95	78	88	76
AMERICAN FALLS RESV INFLOW	MAY-JUL	790		1560	63		2320	2463

UPPER SNAKE RIVER BASIN  
Reservoir Storage (1000 AF) - End of April

UPPER SNAKE RIVER BASIN  
Watershed Snowpack Analysis - May 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HENRYS LAKE	90.4	67.2	87.3	81.8	Camas-Beaver Creeks	2	6760	165
ISLAND PARK	135.2	103.2	132.4	125.7	Henrys Fork River	10	274	111
GRASSY LAKE	15.2	13.8	13.7	11.7	Teton River	8	313	120
JACKSON LAKE	847.0	205.7	713.4	456.5	Snake above Jackson Lake	7	311	101
PALISADES	1355.5	915.3	1005.7	871.8	Gros Ventre River	4	323	107
RIRIE	96.5	46.7	55.0	63.5	Hoback River	6	549	114
BLACKFOOT	348.7	83.5	124.8	274.6	Greys River	5	268	109
AMERICAN FALLS	1672.6	1618.4	1270.6	1542.9	Salt River	5	585	116
					Snake above Palisades	27	348	109
					Willow Creek	4	1336	123
					Blackfoot River	2	0	93
					Portneuf River	2	0	167
					Snake abv American Falls	34	400	112

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

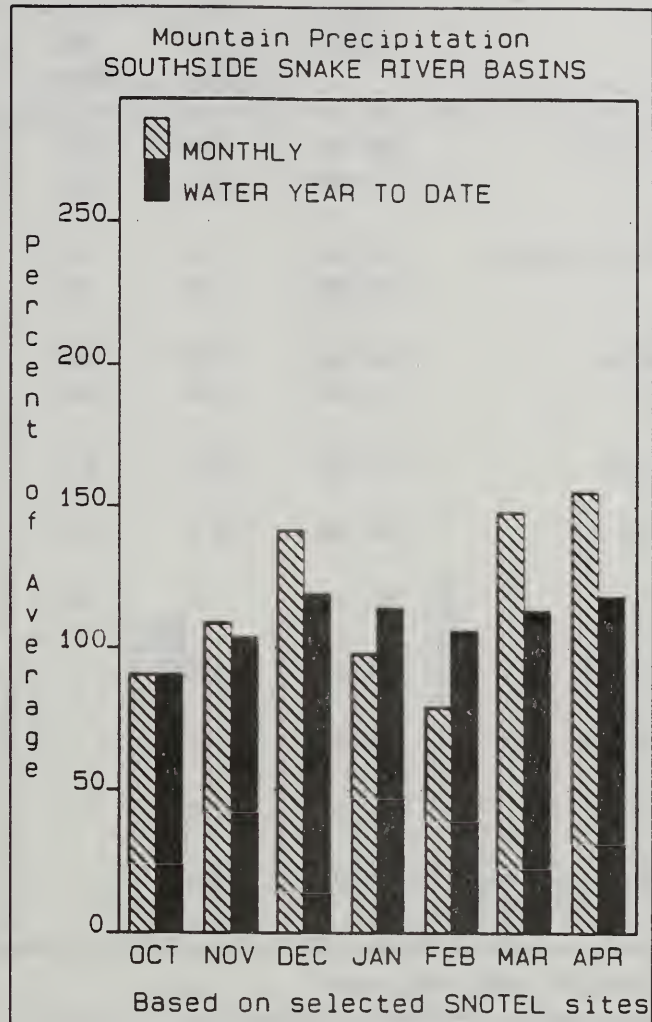
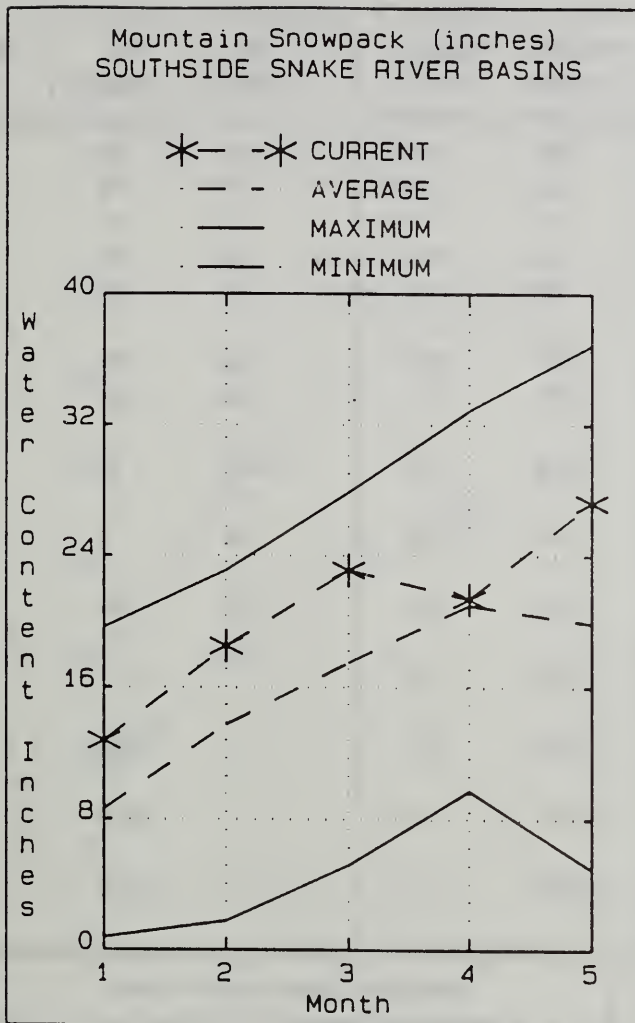
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
 (2) - The value is natural flow - actual flow may be affected by upstream water management.



# SOUTHSIDE SNAKE RIVER BASINS

MAY 1, 1993



## WATER SUPPLY OUTLOOK

Mountain precipitation was 150% of average for the past two months, bringing the water year precipitation to 118% of average. As a result of the abundant moisture and delayed snowmelt in the higher elevations, snowpack percentages increased from last month and are now above normal in all watersheds south of the Snake River. Streamflow forecasts for the May-July runoff period call for 98% of average for Salmon Falls Reservoir inflow and 102% of average for the Bruneau River. As a result of the delayed runoff, reservoir storage remains low in Oakley and Salmon Falls reservoirs with each reporting about 30% of usable capacity. When spring finally arrives, inflows should improve current reservoir storages. Owyhee reservoir filled in early April. Water supplies should be adequate south of the Snake River, and recreational river users can expect a longer season due to the delayed snowmelt this year.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - May 1, 1993

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	===== Chance Of Exceeding * =====						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
OAKLEY RESERVOIR inflow	MAY-JUL	10.0	16.0	20	95	24	30	21
	MAY-SEP	12.0	19.0	23	96	27	34	24
SALMON FALLS CK nr San Jacinto	MAY-JUL	24	43	56	98	69	88	57
	MAY-SEP	28	48	61	98	75	95	62
BRUNEAU nr Hot Spring	MAY-JUL	118	146	165	102	184	210	162
	MAY-SEP	124	155	175	101	196	225	173
OWYHEE nr Gold Ck (2)	MAY-JUL	3.9	9.3	13.0	78	16.7	22	16.7
OWYHEE nr Owyhee (2)	MAY-JUL	19.0	35	45	78	56	71	58
OWYHEE nr Rome	MAY-JUL	65	125	165	83	205	265	200
SNAKE RIVER at King Hill	MAY-JUL	550		1190	58		1790	2038
SNAKE RIVER near Murphy	MAY-JUL	540		1230	59		1850	2077
SNAKE RIVER at Weiser	MAY-JUL	1710		2770	73		3870	3793
SNAKE RIVER at Hells Canyon Dam	MAY-JUL	1880		3090	72		4320	4276

SOUTHSIDE SNAKE RIVER BASINS  
Reservoir Storage (1000 AF) - End of April

SOUTHSIDE SNAKE RIVER BASINS  
Watershed Snowpack Analysis - May 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
OAKLEY	77.4	22.5	13.3	39.2	Raft River	1	0	185
SALMON FALLS	182.6	21.9	25.5	81.4	Goose-Trapper Creeks	2	0	109
WILDHORSE RESERVOIR	71.5	36.0	10.5	47.2	Salmon Falls Creek	5	677	122
OWYHEE	715.0	715.9	147.9	619.0	Bruneau River	5	592	124
BROWNLEE	1419.3	956.2	966.7	515.9	Owyhee Basin Total	7	0	138

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

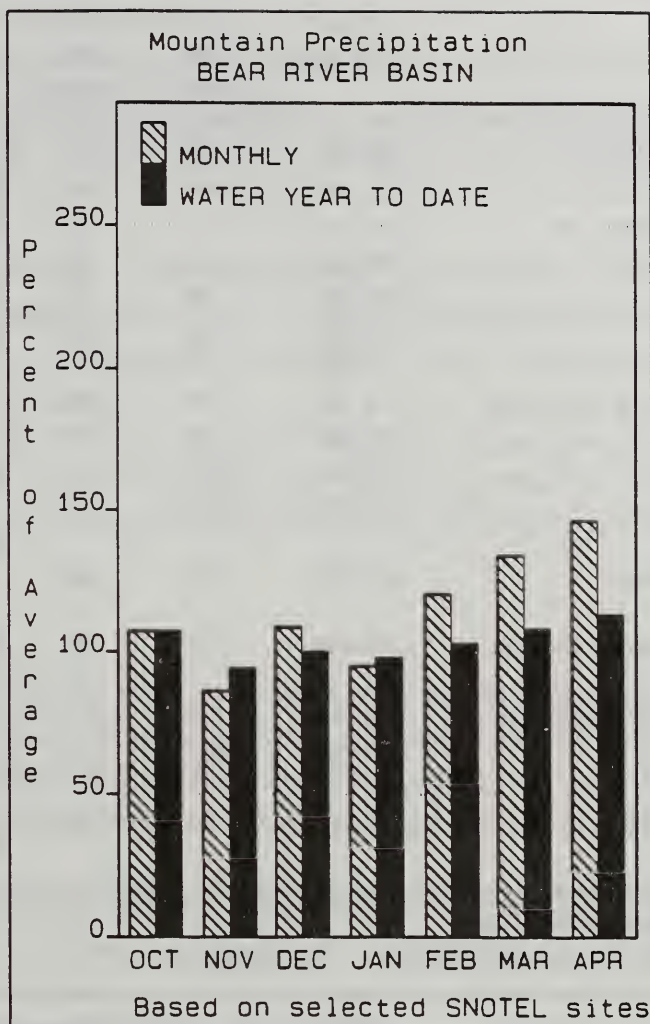
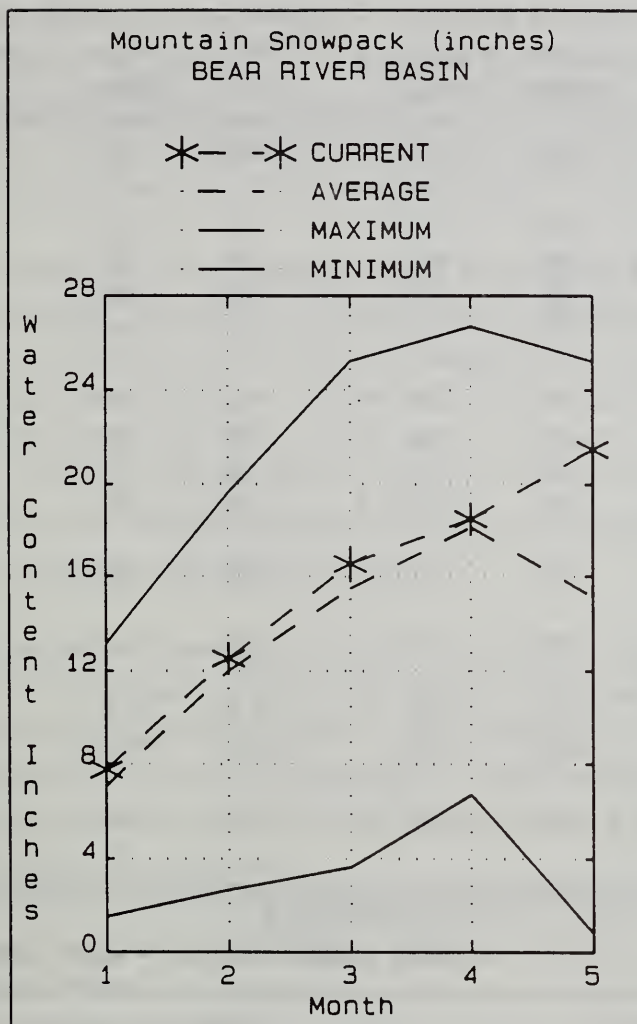
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.



# BEAR RIVER BASIN

MAY 1, 1993



## WATER SUPPLY OUTLOOK

Mountain precipitation was above average in April for the third consecutive month, bringing the water year total to 113% of average. This wet pattern continued into May, with many stations receiving their entire normal monthly complement during the first week. Cool temperatures kept this moisture in the form of snow at the higher elevations. The heavy precipitation combined with delayed snowmelt produced a significant increase in snowpack percentages from last month, and all watersheds are reporting above average to well above average snowpacks for May 1. Streamflow forecasts have also improved and now call for near normal runoff throughout the basin. Reservoir storage continues to be the low point in terms of water supply with Bear Lake reporting only 22% of usable capacity (30% of average), and Montpelier Creek Reservoir at 50% of usable capacity. Even with the near normal runoff expected in the basin, water users who rely on Bear Lake could experience shortages again this year.

BEAR RIVER BASIN  
Streamflow Forecasts - May 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>						30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
BEAR RIVER nr Randolph	APR-JUL	46	91	122	93	153	198	131
SMITHS FORK nr Border, WY	APR-JUL	77	87	94	92	101	111	102
	APR-SEP	87	99	107	91	115	127	118
	MAY-JUL	68	78	85	92	92	102	92
	MAY-SEP	80	91	99	91	107	119	109
THOMAS FORK nr Wy-ID Stateline	APR-JUL	21	26	30	91	34	39	33
	APR-SEP	23	29	33	92	37	43	36
	MAY-JUL	17.0	22	25	93	28	33	27
	MAY-SEP	19.0	24	28	93	32	37	30
BEAR RIVER near Harer	APR-SEP	171	265	325	94	385	480	345
BEAR RIVER blw Stewart Dam (2)	APR-SEP	176	230	270	91	310	365	298
MONTPELIER CREEK nr Montpelier	APR-JUL	7.3	9.9	11.6	95	13.3	15.9	12.2
	APR-SEP	8.7	11.6	13.5	95	15.4	18.3	14.2
CUB RIVER nr Preston	APR-JUL	37	42	45	96	48	53	47

BEAR RIVER BASIN  
Reservoir Storage (1000 AF) - End of April

BEAR RIVER BASIN  
Watershed Snowpack Analysis - May 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
WOODRUFF NARROWS		NO REPORT			Smiths & Thomas Forks	4	328	116
WOODRUFF CREEK		NO REPORT			Bear River ab WY-ID line	10	684	133
BEAR LAKE	1421.0	316.9	520.0	1059.0	Montpelier Creek	2	725	112
MONTPELIER CREEK	4.0	2.0	2.2	2.2	Mink Creek	1	1987	120
					Cub River	1	1995	153
					Bear River ab ID-UT line	15	640	129
					Malad River	1	0	0

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.



# Interpreting Streamflow Forecasts

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## Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

***Most Probable (50 Percent Chance of Exceeding) Forecast.*** This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance that the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right, due to errors resulting from future weather conditions and the forecast equation itself. This does not mean that users should not use the most probable forecast; it means that they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

## To Decrease the Chance of Having Too Little Water

If users want to make sure there is enough water available for their operations, they might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in-between). These include:

***70 Percent Chance of Exceeding Forecast.*** There is a 70 percent chance that the streamflow volume will exceed this forecast value. There is a 30 percent chance the streamflow volume will be less than this forecast value.

***90 Percent Chance of Exceeding Forecast.*** There is a 90 percent chance that the streamflow volume will exceed this forecast value. There is a 10 percent chance the streamflow volume will be less than this forecast value.

## To Decrease the Chance of Having Too Much Water

If users want to make sure they don't have too much water, they might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk of having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

***30 Percent Chance of Exceeding Forecast.*** There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

***10 Percent Chance of Exceeding Forecast.*** There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

## Using the forecasts—an example

**Using the Most Probable Forecast.** Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Deeth between March 1 and July 31.

**Using the Higher Exceedance Forecasts.** If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

**Using the Lower Exceedance Forecasts.** If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

UPPER HUMBOLDT RIVER BASIN								
STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	<-----DRIER----- FUTURE CONDITIONS -----WETTER----->						
		----- Chance of Exceeding -----						
		90%	70%	50% (Most Probable)	30%	10%	25 YR.	
		(1000AF)	(1000AF)	(1000AF) (% AVG.)	(1000AF)	(1000AF)	(1000AF)	
MARY'S RIVER nr Deeth	MAR-JUL	5.0	20.0	36	77	52	76	47
	APR-JUL	8.0	17.0	31	74	45	67	42
LAMOILLE CREEK nr Lamoille	MAR-JUL	6.0	16.0	24	79	32	43	31
	APR-JUL	4.0	15.0	22	75	30	41	30
NF HUMBOLDT RIVER at Devils Gate	MAR-JUL	6.0	12.0	43	73	74	121	59

For more information concerning streamflow forecasting ask your local SCS field office for a copy of "A Field Office Guide for Interpreting Steamflow Forecasts".

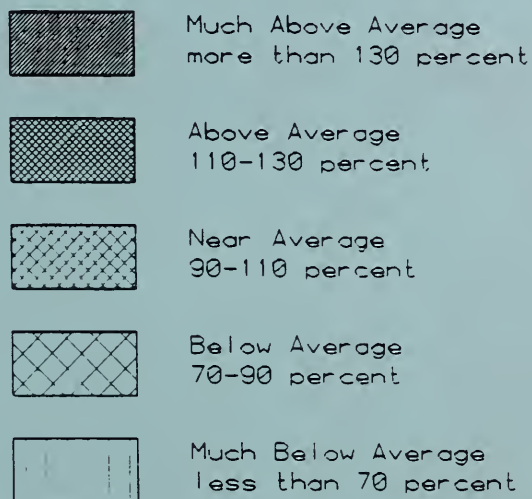


# IDAHO MOUNTAIN SNOWPACK

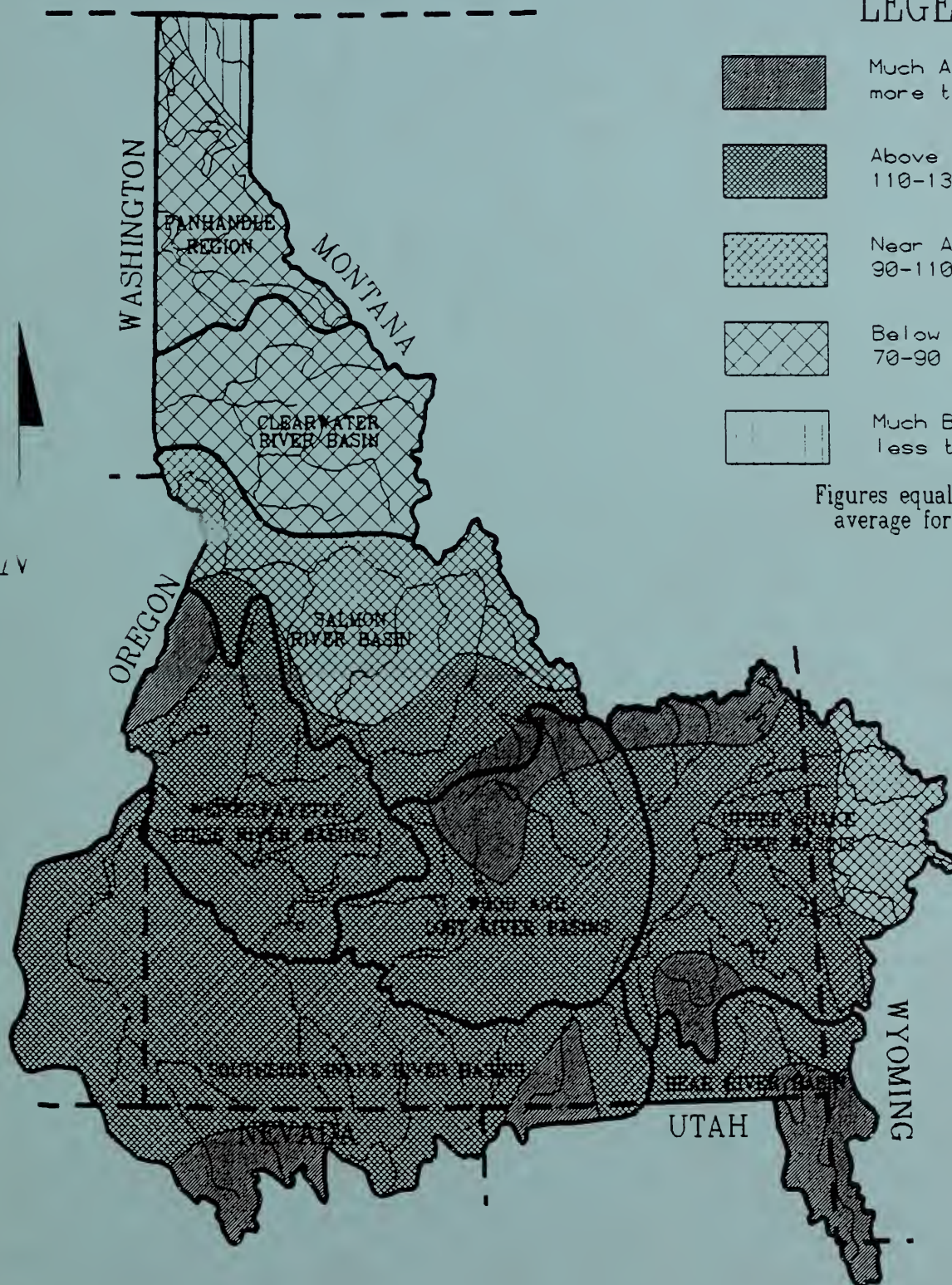
MAY 1, 1993

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## LEGEND



Figures equal percent of average for drainage.

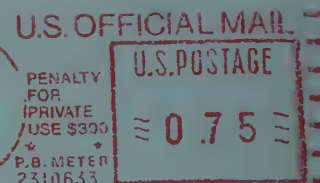
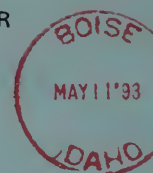




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SOIL CONSERVATION SERVICE

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In addition to basin outlook reports, a Water Supply Forecast for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.